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ABSTRACT

This study investigated possible sources of teacher change in the Stallings Effective Use of time (EUOT) staff development program administered to preservice teachers. These sources were: (1) the full EUOT program with feedback plus workshops; (2) feedback only; and (3) the trainer as post-treatment observer. Over a 15-month period, 20 student teachers participated in full treatment of feedback plus workshop, 7 participated in feedback-only treatment, and 23 served as control. Of the full-treatment group, 7 received one post-treatment observation by the trainer and another by an unknown observer, 6 received post-treatment observations by the trainer only, and 7 by an unknown observer only. The study measured change with 11 variables: 4 teacher-focused, 4 student-focused, and 3 class-focused. The paper concludes the EUOT program can have good application at the preservice level. Of the variables measured, student involvement in interactive teaching was the only one for which full treatment was significantly superior to feedback alone. Full treatment changed the ratio of interactive teaching by the teacher to interactive attending by the students, as opposed to rearranging time use. The findings discuss implications for teacher education and suggest areas of further research. (JD)

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A SEARCH FOR SOURCES OF TREATMENT EFFECTS IN A TEACHER EFFECTIVENESS TRAINING PROGRAM

by

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Abstract

The purpose of this study was to investigate three possible sources of teacher change in the Stallings Effective Use of Time (EUOT) staff development program administered to preservice teachers: (1) full EUOT program of feedback plus workshops, (2) feedback only, and (3) trainer as post-treatment observer.

Subjects included 50 student teachers from a state university. Over a 15 month period, 20 student teachers participated in full treatment of feedback plus workshop, 7 in feedback-only treatment, and 23 served as a control. Also, of the full-treatment group, 7 received one post-treatment observation by the trainer and another by an unknown observer; 6 received both post-treatment observations by the trainer and 7 by an unknown observer.

Change was measured with 11 variables (4 teacher-focused, 4 student-focused, 3 class focused) created by aggregating specific variables from the Stallings Observation Instrument.

Analysis of variance indicated full-treatment subjects improved (moved toward criterion levels) for 8 of 11 variables, with change significant at the .05 level for students in interactive instruction, students off task, and teacher monitoring. However, feedback-only subjects improved on 9 variables, with change significant for teacher interactively instructing, teacher managing, and students in interactive instruction. Although both groups showed positive significant change for students in interactive instruction, additional ANOVA indicated significant difference between the groups, with full-treatment classes improving more. Analysis by t-test, within and between groups, indicated a trainer-as-observer effect of increasing subjects' management time and decreasing their students' time off task.

Studies on effective teaching from the past ten to fifteen years have identified specific teacher behaviors that are associated with student achievement and other outcomes. More recently, field studies have been designed to test these relationships experimentally (see Gage and Needels, 1989, for a review).

Very little--if any--research has been done to identify specific causes for changes in teacher effectiveness, either within or outside of a given program. This study investigates sources of treatment effects in experimental studies.

Background

Inservice and Preservice Programs

Today there are many educational programs in place modeled after process-product experimental studies--both in staff development and in teacher education. A wide variety of staff development programs claim positive results in improving teacher instructional effectiveness, classroom management, and student time-on-task for inservice teachers (e.g., Evertson, 1985; Stallings, 1980). Most of these programs are designed around some combination of training activities, workshop presentations, and prepared materials provided to teachers in specific training formats, and some use various methods to assess effectiveness through pre and post tests/observations (cf. Stallings et al., 1979).

Some preservice programs are based on these findings from process-product research (Glassberg & Sprinthall, 1980). More and more current teacher preparation programs have attempted to address the research on effective teaching, either as a separate or integral program component. Research indicates that student teachers frequently have an especially difficult time with classroom management and discipline (Veenman, 1984). Also, research

indicates a link between the student teacher's classroom management, self-concept, and student teaching rating (Griffin, 1981; Garvey, 1970; Doherty, 1980; Wright & Tusca, 1965; Walberg, 1968). Although university and college teacher training programs attempt to address classroom management in their programs of study, ideas and methodologies presented in university coursework often "wash out" during student teaching (Zeichner & Tabachnick, 1981). In a review of research on teacher preparation programs, Evertson, Hawley, and Zlotnik (1984) identified the following as one of three common characteristics of effective teacher education programs:

> The collection of data on student performance, frequent feedback of this information, and the use of the data to identify areas in which the student teacher particularly needs to learn more (p. 44).

Finally, there is a policy issue, as well as a preservice and inservice one. Assumptions behind most state-mandated teacher evaluation programs are that measured change in teacher behavior is due to exposure to a program. Some state departments of education prescribe programs of training for teachers, hire consultants to teach them, require teachers to take them, and pay teachers according to how well they demonstrate the program's desired behaviors. Again there is the assumption that it is the entire program, however it is delivered, that is causing the measured effects in teacher behavior. With the wide acceptance of this assumption at university, school district, and state levels, it seems appropriate to investigate sources of treatment effects.

This paper reports a series of four linked studies that assessed the effects of an inservice teacher training program applied at the preservice level and attempted to "tease out" possible sources of these effects. The

preservice program was adapted from the Stallings Effective Use of Time (EUOT) program, an inservice program that has shown positive measured results in helping teachers improve their classroom effectiveness, with "effectiveness" being defined in terms of time allocations among various classroom activities. Although this particular program has been recognized as an effective inservice program, no studies assessing its use and effectiveness at the preservice level have been reported. The initial concern of this study was to determine if participation in the EUOT program at the preservice level would change student teachers' and their students' behavior. Once this change was measured, the major concern was to investigate three possible sources of change: (1) the whole EUOT program, (2) the feedback portion of the EUOT program (subjects' knowledge of what is being measured), and (3) the presence of trainer as post-treatment observer. The first three studies investigated EUOT program effectiveness at the preservice level and also controlled for observer effects in systematic ways. The fourth study investigated the possibility that change in teacher behavior could be attributed to feedback (i.e. to knowledge of the specific behaviors which would be observed).

Method

The first three studies involved 43 university seniors who were student teachers during the fall, winter, or spring quarters of the 1986-87 school year; the last study, 7 student teachers during the fall quarter of 1987-88. All studies measured teacher and student use of class time during the first and last two-week periods of the quarter. Elementary classes were observed during a reading or math lesson; middle school and secondary class lessons observed varied with the subject area (see Figure 1). In the first three studies (Studies A through C), experimental groups received identical intervention

including both feedback and participation in specific trainer-led workshops. Post-workshop observation for the experimental groups, however, varied. The two post-workshop observations for the experimental group of Study A were equally divided between the trainer and another observer; all post-workshop observation data for the experimental group of Study B were collected by the trainer, while all post-workshop observation data for the experimental group of Study C were collected by an observer unknown to the subjects. Student teachers in the fourth study (Study D) received an intervention of only feedback; these subjects did not receive the set of trainer-led workshops. All post-workshop observations for Study D were collected by an observer unknown to the subjects.

Instrument

The Stallings Observation Instrument (SOI) was used in measuring classroom teaching behavior and student behavior. The SOI includes both five Classroom Snapshots which record the specific classroom activities of both teacher and students and five Five-Minute Interactions (FMI's) which record teacher-student interactions. The observer focuses on the teacher during both parts of the observation and also keeps a brief log of classroom events.

Classroom Snapshot data indicate how both teacher and students apportion classroom time among 13 specific classroom activities. Five Classroom Snapshots are completed at equal time intervals throughout an observation period.

The FMI records at approximately the speed of speech the teacher's verbal interactions with students. Each interaction is coded in the categories of who, to whom, what, and how. Approximately 50 to 60 interactions are recorded during a five-minute coding period, and five equally spaced FMI's are completed during each observation: thus, approximately 250-300 interactions are coded across a given class period.

Sample

Fifty seniors at a university in middle Tennessee participated during their student teaching experience: from the 1986-87 year, 15 in the fall, 13 in the winter, and 15 in the spring; from the 1987-88 year, 7 in the fall (see Figure 1). Student teachers were divided as randomly as possible within the

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Insert Figure 1 about here

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confines of the university programs into treatment and control groups. In an effort to reduce subject contamination, subjects assigned to a given school were in either the experimental or control group. University supervisors of student teachers took turns in allowing their students to participate in the study. Subjects in all groups were each observed twice during the first two weeks and twice during the last two weeks of their teaching.

Variables

The eleven observational variables reflected percent of observed class time and were categorized as shown in Figure 2. The first eight variables are aggregates of specific Classroom Snapshot variables, while the last three are mutually exclusive variables measured by the FMI.

Insert Figure 2 about here

Treatment

Study A. In Study A, 15 student teachers were divided into two groups (experimental N=7; control N=8). Near the end of the first two weeks of their student teaching, both groups were observed twice with the Stallings

Observation Instrument (SOI) to assess initial time use in (1) interactive instruction, (2) classroom management, and (3) student off-task behavior. Student teachers in the experimental group then participated in EUOT program workshops delivered as an intervening/replacement treatment of five ninety-minute workshops, one workshop per week, beginning the second or third week of their taking over one or more classes. These workshops replaced the university's usual preservice seminars led by a university supervisor of student teaching. The five workshops included (1) research findings on classroom time use, (2) classroom organization and management, (3) student behavior and motivation, (4) interactive instruction and higher order questioning, and (5) lesson design. During the first workshop, subjects received feedback from the first set of observations as to their use of classroom time in areas of (1) interactive instruction, (2) classroom management, and (3) student off-task behavior. Two of the workshops involved peer observation and feedback about student off-task behavior and teacher-student interactions. Workshops for the experimental group were led by the investigator. Subjects in the control groups participated in seminar discussion groups led by a university supervisor and focused on their experiences in the classroom.

Participants in the control group, while also observed, received no feedback about their performance and no intervention. In the final eighth and ninth weeks of their student teaching experience, both groups were again observed twice. Observations were conducted by the trainer and another observer, with post observations for each subject equally divided. Both the trainer and the other observer were experienced in using the SOI. Regular reliability checks showed their reliability to be .95 or above.

Study B. In Study B, 13 student teachers (experimental N=6; control N=7) again received the same treatment as those in Study A, but with one difference: All post-workshop observation data were collected by the trainer.

Study C. In Study C, 15 student teachers (experimental N=7; control N=8) again received the same treatment as those in Studies A and B, but with another difference: All post-workshop observation data were taken by an observer unknown to subjects, not by the trainer.

Study D. In Study D, 7 student teachers were observed twice pre-treatment and twice post-workshop, using the SOI to measure the same variables as before. This group, however, had no workshop training in methods or techniques. Instead, they received only the feedback profile portion of the treatment given the other experimental groups. This feedback provided information about their pretest results, which included knowledge of what the categories of measurement were, how measurements were taken, what their scores in each category were, and what the criterion level was for each area. To control for possible trainer-as-observer effects, all post-workshop observation data were taken by an observer unknown to subjects, not by the trainer.

Analyses

Question One. The first question in this study investigated how participation in EUOT program components (profile feedback and intervention workshops) at the preservice level would affect student teachers' and their students' use of time in (1) interactive instruction, (2) classroom management, and (3) off-task behavior. The following comparison was made for all measures:

Comparison 1.	Studies A,B,& C (N=20) Exp. Groups Receiving Full Program of Both Feedback and Training	>	Studies A,B,& C (N=23) Con. Groups Receiving No Feedback or Training

Data addressing question one were analyzed using a 2 X 2 ANOVA with time of measurement and group as independent variables.

Question Two. The second question investigated was what would be the effect of profile feedback only and no training workshops. The following comparison was made for all measures:

Comparison 2.	Studies A,B,& C (N=20) Exp. Groups Receiving Full Program of Both Feedback and Training	>	Study D (N=7) Receiving Feedback Only	> Studies A,B,& C (N=23) Con. Groups Receiving No Feedback or Training

Data for question two was analyzed using a 2 X 3 ANOVA with independent variables of time of measurement and group as independent variables.

Question Three. The third question investigated the effect of the trainer as post-workshop observer. For Question Three, comparisons were made both within and between groups:

Comparison 3. (Within Group)	Study A (N=7) Exp. Grp. A Post-Workshop Observation Scores When Taken by Trainer	>	Study A (N=7) Exp. Grp. A Post-Workshop Observation Scores When Taken by Another

Comparison 4. (Between Groups)	Study B (N=6) Exp. Grp. B Receiving Full Program and Post-Workshop Observation by Trainer	>	Study C (N=7) Exp. Grp. C Receiving Full Program and Post-Workshop Observation by Another

Data for question three comparisons were analyzed using t-tests with observer and score as independent variables.

For all three questions, effects tested were movement toward or away from criterion levels. Unlike the EUOT inservice program which measures teachers in terms of whether or not they reach set criteria, this study examined student teachers' changes in classroom behavior. For the inservice EUOT program, the goal is that teachers meet the criterion reference score in each of several categories of variables--it is a dichotomous yes or no measurement. For this study whether or not student teachers reached criterion was unimportant; the concern was whether or not their behavior changed and in which direction the change occurred--more or less of a given behavior.

Results

Results of the analyses of preservice participation in the EUOT program (Question One) and the effect of feedback alone (Question Two) indicated positive change for the experimental groups in all four studies: Experimental subjects exhibited more of the desired teaching behaviors. Data for both Questions One and Two are presented in graph form in Figures 3 through 5. Results for the analyses for effects of trainer as post-workshop observer indicated negative change: When the trainer was also the post-workshop observer, experimental subjects exhibited less of the desired behaviors.

Insert Figures 3-5 about here

Question One.

For three variables, teacher monitoring, teacher interactively instructing, and students in seatwork, student teachers in both experimental and control groups initially met and maintained criterion levels. For the remaining eight, those receiving full EUOT training moved toward criterion more

than those in the control group (see Table 1). The difference was significant at the .05 level for the two variables most frequently reported in the literature as relating to teacher effectiveness and student achievement, students in interactive instruction and students off task. Student teachers in the control group remained the same on two variables, moved further away from criterion level on five, and moved toward criteria on only one. In Figures 3 through 5, these differences are presented in graph form, with the treatment group represented by the hollow circle and the control by the hollow triangle.

Insert Table 1 about here

Question Two.

For one variable, teacher monitoring, all groups--full treatment, feedback only, and control--initially met and maintained criterion levels. Scores of both full treatment and feedback only groups moved toward criterion more than the control on all remaining eight variables; and for seven of those eight, scores of the feedback only group equalled or surpassed those of the full treatment group. Only for the variable of all behavior were scores of the full treatment group superior (see Table 2). In figures 3 through 5, the feedback only group is represented by the filled circle.

Insert Table 2 about here

Question Three.

Observer Effect Within Group. For three variables, teacher monitoring, teacher interactively instructing, and teacher alone, subjects met criterion

levels on post-workshop observations by both trainer and another observer. For three other variables, teacher managing, all academics, and all management, student teachers performed closer to criterion levels when observed by another than by the trainer. Only for the variable of all behavior did subjects perform closer to criterion level with the trainer as post-treatment observer. Analysis of variables in the Student Engagement category was not possible because the metrics differed across studies (see Table 3).

Insert Table 3 about here

Observer Effect Between Groups. For three of the 11 variables, teacher monitoring, teacher interactively instructing, and students in seatwork, subjects met criterion levels on post-workshop observations by both trainer and another observer. Only for the variable of students off task did scores of the trainer-observed group come closer to criterion level. For the remaining seven variables, subjects observed by another observer performed closer to criterion levels than subjects observed by the trainer (see Table 4).

Insert Table 4 about here

Discussion

The variables as presented in this study fall into three categories: teacher-focused, student-focused, and classroom-focused. Within each of these categories, variables are mutually exclusive. This means that for ANOVA comparisons one and two, class time, whether focused on teacher, students, or whole classroom, is of a limited amount and is apportioned in various ways. Gains in one category are accompanied by losses in other categories.

Since student teacher and students exist and are observed within the same time frame, comparisons must be made between these two to get a clearer picture of what is happening in the classroom. For example, if the student teacher greatly improves in the amount of interactive instruction he or she provides to students, but students make little or no gain in the amount of interactive instruction they receive, then there is a problem. The fact that the teacher improved means nothing in terms of what really counts. This frame of reference is important in examining both the ANOVA results of comparisons one and two and also the t-test results of comparisons three and four.

Comparison with the control group is also important. Since the control group varied an average of only 1.36 percentage points for the 11 variables, this stability indicates that changes observed in the treatment group were the result of something other than time. Most likely, these observed changes were the result of the intervention treatment administered in this study.

Question One

Data analysis for question one, the effectiveness of EUOT training at the preservice level, indicated that while EUOT training does not significantly affect the total classroom time configuration, it does have some effect on student teachers and even more on the students in their classrooms. In other words, although the teachers did not increase the "time they teach," they became more effective at bringing the students along with them.

Teacher Focus, Student Focus, and Relationships. Data generated from the Classroom Snapshot (variables #1-#8) indicated that EUOT program participation changed the way student teachers used their time in managing and monitoring. Student teachers in the full treatment group did less managing and more monitoring, while the amount of interactive instruction stayed the same.

Student time use shifted from management and off-task to seatwork and interactive instruction. Students did about the same amounts of seatwork and management pre and post treatment, but greatly decreased their off-task rates and increased their involvement in interactive instruction.

It is interesting to note that the amount of seatwork students did at pre- and post-workshop observations was about the same, but the amount of teacher monitoring of that seatwork increased greatly. Student teachers initially monitored students only about one-third of the time they were involved in seatwork assignments; the remaining two-thirds of the seatwork was unsupervised. After the treatment, students were monitored during three-fourths of their seatwork. It is possible that this increased monitoring accounts for a portion of the change in student off-task behavior. However, much more change in off-task behavior occurred than can be accounted for in this way.

Student teachers in the treatment group did not change the amount of time they spent interactively instructing students. Yet, there was a large time increase in student involvement in interactive instruction and a corresponding drop in student off-task behavior. This suggests that student teachers did something "different" in their instruction that better engaged students in the instruction. Thus, while the quantity of their teaching did not change, the quality did. This change is most important: Student involvement in interactive instruction is the one variable of the 11 that is significantly and repeatedly linked with student academic gains in the process-product literature (cf. Brophy, 1979; Good and Grouws, 1979; Stallings & Mohlman, 1982).

Total Classroom. The picture painted of the total classroom by the three FMI-generated variables (variables #9-#11) shows little variation from pre to

post-workshop observations. There are, however, some trends. For the treatment group, academic statements and activities increased, while those related to management and behavior went down. For the control group, the opposite pattern appeared. It would seem, then, that participation in EUOT workshops at the preservice level has a somewhat beneficial effect in increasing time devoted to academics and in decreasing time used in management; however, it has little effect on time spent dealing with behavior.

Question Two

Examination of the data for question two, the effects of feedback only, seems at first to indicate that receiving the feedback portion of the EUOT program is as effective for student teachers as participating in the entire program of feedback plus five seminars. However, there are some constraints that should be taken into account before accepting such a simplistic explanation. Although the pre-treatment time disbursement by full-treatment and control groups was relatively close on all 11 variables, this did not hold true for the feedback-only group. Student teachers in the feedback-only group began much higher in monitoring and managing and much lower in interactively instructing; students in the group began much higher in seatwork and much lower in interactive instruction. It seems reasonable to question if the student teachers and students in Study D were representative of the same population as those in Studies A, B, and C. The fact that the feedback-only group had such a small number of student teachers (N=7) as compared to the full treatment (N=20) and the control (N=23) further complicates matters, as does the time of year. Control and full-treatment groups were spread throughout the school year; the feedback-only group student taught during the first three months of the school year. The initial disparate scores may reflect the unique teacher tasks required at the beginning of a school year.

Teacher-Focus, Student-Focus, and Relationships. For three of the four teacher-focused variables, the feedback-only student teachers outperformed the full-treatment ones. Their most dramatic shift in time use was in decreasing their management by two-thirds and almost doubling their amount of interactive instruction (see Figure 5). For both of these variables, they began worse and ended better than the full-treatment group. This change was statistically significant for both. Students in this group outperformed students in the full-treatment group in spending less time in management and in behavior.

However, for involvement in interactive instruction, which is the variable most connected with academic achievement, students in the feedback-only group fell below the full-treatment group and did not reach criterion level. The actual change in the amount of time students were involved in interactive instruction seemed to be tied to the actual time the student teachers spent interactively instructing. Comparing actual student involvement in interactive instruction with the amount possible as provided by the student teacher shows the greatest gain for the full-treatment group. At the beginning of student teaching, students in the full-treatment group attended 73% of the time student treachers were observed providing interactive instruction: at the post-workshop observation this rose to 90% -- a gain of 17%. For the feedback-only group, students initially attended 68% of the time student teachers were observed providing interactive instruction; this rose to 74% by the end of the preservice assignment -- a gain of 6%. (By comparison, students in the control group decreased from 68% to 62%.) Analysis of variance indicated a significant change ($p \leq .05$) for students in the full-treatment group but not for those in the feedback-only group. The full treatment of feedback plus workshop significantly increased the time students attended to interactive instruction

compared to the time their student teachers provided such instruction. Although feedback only did change the pattern of time use within the class time frame, it altered very little the ratio of student teachers' interactive teaching to students' interactive attending. The change for interactive instruction in the feedback-only group appears to be one of increased quantity, without the implication of increased quality found in the full-treatment group.

The feedback-only group followed the pattern of the full-treatment group in increasing the amount of monitoring they did relative to the amount of seatwork the students did. This could account for a portion of the improvement of student off-task behavior.

Total Classroom. The overview of the total classroom provided by the FMI indicates only small variations from pre- to post-workshop observations. Both treatment groups followed the trend of increasing academics and decreasing management; the control group showed the opposite pattern. The control group showed no change for behavior statements/activities; the full-treatment group improved; and the feedback-only group got worse.

Question Three

Data analysis for question three, the effect of trainer as post-workshop observer, indicates that having the trainer as the observer does not elicit the more program-desired behaviors on the part of the student teacher (see Figures 6 and 7). It does, however have an observable effect: When the trainer was the observer, student teachers spent more time in management and the students were less off task.

Insert figures 6 and 7 about here

In the within-group study (Study A), data was taken with the original SOI, which used a "group size" measurement instead of an actual student head count: 1 = one student, S = 2 to 10 students, L = 11 to one less than total number, E = everyone. These general measures of number for small and large groups made it impossible to separate the computer-combined, student-focused data into percentages for the trainer and the other observer. Of the teacher-focused variables, when student teachers were observed by the trainer, they themselves engaged in more management. The classroom-focused variables echoed this pattern. When the trainer was the post-treatment observer, 10% of the total class time shifted from academics to management.

The between-groups study repeated the emphasis on management for the group where post-workshop observation data was taken by the trainer. Student teachers did more managing and less monitoring; students engaged in more management, more seatwork, and were less off-task.

In interpreting the above two studies, it would seem that subjects were sensitized to the trainer. With the trainer as observer, they demonstrated a pattern of behavior that made for a tighter control of their classrooms, and this took the form of increased management on their part and increased seatwork for students. It would seem that their definition of a good teacher was one who was "in control," and they expended class time to achieve this.

Discussion

There were three possible sources of effects investigated in this study: the EUOT program as a whole, the feedback portion of the EUOT program, and the trainer as observer. All three of these demonstrated effects. The EUOT program as a whole positively affected all 11 variables as measured. The feedback portion of the program equally or better affected 10 of the 11

variables as measured. It did not improve a student teacher's ability to increase student involvement in instruction. Examination of the workshop contents (Harris, 1988) indicates that Workshop Four is probably the most direct source of effects for this variable. Also, the workshop sessions tended to develop into support groups that encouraged subjects to try new ideas in teaching, most of which are aimed at increasing student involvement in instruction. The effects of having the trainer as post-workshop observer was to increase the amount of managing that student teachers did and to decrease the amount of off-task behaviors that students demonstrated.

Conclusions

Conclusions drawn from this study include the following:

1. The EUOT teacher training program developed for the inservice level can have good application at the preservice level.

2. Providing subjects with initial feedback that describe variables being measured, acceptable levels of those variables, and their own personal scores for each variable results in improved post-treatment scores. Of the variables measured in this study, student involvement in interactive teaching is the only one for which full treatment is statistically superior to feedback alone.

3. An interactive workshop format plus feedback is more effective than feedback alone for actually changing the ratio of interactive teaching by the teacher to interactive attending by the students, as opposed to rearranging time use (that is, improving quality as opposed to rearranging quantity).

4. When the trainer is also the one who records post-workshop data, subjects switch to more emphasis on management than they might otherwise use.

Although this study yields several definite conclusions, there are limitations to generalizing findings to all situations. This is a study of

student teachers at a state university. Results, therefore, should not be generalized to inservice teachers. Because all subjects were seniors at the same university, there is the possibility of effects from the university's teacher educational program, both classwork before and seminars during this study. Also, Study D, which investigated the effect of feedback only, occurred at the beginning of the school year. Pre-treatment measures may well reflect the different structure of a classroom at this time, and a portion of the pre- and post-treatment differences observed may be related to the normal evolution of a classroom in the first two months of school (cf. Evertson & Emmer, 1982).

Implications for Further Research

The findings of this study suggest areas of further research. First, a study providing student teachers with workshop training and no feedback would complete the one "missing piece" in this series of linked studies. Also, a replication of Study D (feedback-only) during the mid-winter and spring semesters, thus increasing the N from 7 to 20, would both confirm findings and control for beginning-of-the-year effects. Finally, providing student teachers with an intervention of feedback and one workshop focused on interactive instruction (materials of EUOT Workshop Four) would begin to determine if a change in students' attending to academic instruction is related to that one workshop or to a synergistic combination of materials contained in the several workshops.

One area for inservice investigation is the format of the EUOT inservice program. If teachers could get the same results from feedback only, such a program would save both time and money over the present EUOT program. The study as proposed would need to be done after the first month or so to avoid beginning-of-the-year effects. It is the opinion of the researcher that for

inservice teachers feedback alone would have some effect, but not the marked effects it did for student teachers. The reason is peer support and accountability. The workshops provide a structured format for peer support and also hold teachers accountable for trying new ideas in each workshop area. Although the student teachers in the feedback-only group did not meet for workshops, they still met as a group once each week, every week, to discuss how their classes were going, to share their failures and successes, and to receive verbal feedback from their university supervisor. These meetings developed a peer support group that encouraged student teachers' efforts and held each student teacher accountable. Such a support format is generally missing in most schools, and accountability at such a precise level is usually nonexistent. Without support and accountability, it is doubtful that great changes in teacher behavior would be effected.

Implications for Teacher Education

Results of this series of linked studies suggest several things regarding teacher education. Comparison one suggests that the EUOT program is effective at the preservice level. Student teachers receiving EUOT training increased class time spent in monitoring assigned seatwork and decreased time in management; their students increased class time in interactive instruction and decreased time in management and off-task behavior. But comparison two brings into question the use of the full EUOT program. Comparison two suggests that the feedback component, apart from the workshops, improves subjects' scores. Providing subjects with personalized feedback information on teaching performance and suggested criteria causes behavior change in the direction of criteria. (Or, stated another way, telling subjects what is going to be on the test increases the chance of their getting the right answer--in this case, of

demonstrating the proper ratios of behaviors and time allotments.) With these two suggestions, there is an obvious question: Why not provide student teachers with the feedback component and drop the workshops? For 10 of the 11 variables measured in this study, the answer would have to be that there is no reason to continue to provide the workshops. For variable #6, however, the answer is that although having the feedback causes teachers to rearrange how they parcel out their time, it does not increase the efficacy with which they instruct students: The quantity of interactive instruction changes, but the quality (i.e. the ratio of interactive teaching to interactive attending) remains about the same. Therefore, some part of the five workshops seems to have improved student teachers' ability to involve their students in their teaching. Examining workshop materials and behaviors measured in Variable #6 suggests that Workshop Four on interactive instruction and higher order questioning most probably directly effects student teachers' ability to keep students involved in interactive instruction.

Comparison three suggests that if the trainer is also the observer, subjects will exhibit more management behaviors. This suggests that investigators should not serve in both roles of trainer and observer.

Taken together, the three comparisons of this study suggest a teacher education program that includes specific feedback for student teachers' and their students' use of class time in areas of interactive instruction, monitoring/seatwork, management, and off-task behavior. Such feedback effects a rearrangement of class time use that results in improvement in each of these areas. To control for increased management, data for this feedback should be gathered by an observer other than a student teaching supervisor--or any educator whom student teachers might be concerned about impressing with their

control of the classroom. Also, a workshop based on the materials and format of the fourth EUOT workshop, "Effective Interactive Instruction," should be incorporated during the preservice experience, including a follow-up session for sharing results and ideas. Providing personal feedback on teaching behavior, collecting data with "neutral" observers, and involving student teachers in trying out ideas of interactive instruction should increase instruction and decrease management and off-task behaviors.

REFERENCES

Brophy, J. (1979). Teacher behavior and its effects. Journal of Educational Psychology, 71, 733-750.

Doherty, J. (1980). An exploratory investigation into the relationship between self-esteem and teaching performance in a group of student teachers. Educational Review, 32, 21-35.

Evertson, C., Hawley, W., & Zlotnik, M. (1984, August). The characteristics of effective teacher preparation programs: A review of research. Nashville, TN: Peabody College of Vanderbilt University.

Evertson, C. M. (1985). Training teachers in classroom management: An experimental study in secondary school classrooms. Journal of Educational Research, 79, 51-58.

Evertson, C. M., & Emmer, E. T. (1982). Effective management at the beginning of the school year in junior high classes. Journal of Educational Psychology, 74 (4), 485-498.

Gage, N. L. & Needels, M.C. (1989). Process-product on teaching: A review of criticisms. Elementary School Journal, 89 (3). 254-300.

Garvey, R. (1970). Self-concept and success in student teaching. Journal of Teacher Education, 21, 357-361.

Glassberg, S., & Sprinthall, N. A. (1980). Student Teaching: A developmental approach. Journal of Teacher Education, 31(2), 31-37.

Griffin, G. A. (1981) Student teaching: A review. Austin, TX: University of Texas at Austin, Research and Development Center for Teacher Education. (ERIC Document Reproduction Service No. ED 223 565)

Good, T., & Grouws, D. (1979). The Missouri mathematics effective project: An experimental study on fourth-grade classrooms. Journal of Educational Psychology, 71, 355-362.

Harris, A. H. (1988). Sources of Treatment Effects in a Teacher Training Program. Unpublished doctoral dissertation, Vanderbilt University, Nashville.

Stallings, J. (1980). Allocated academic learning time revisited, or beyond time on task. Educational Researcher, 8 (11), 11-16.

Stallings, J., Needels, M., & Stayrook, N. (1979). How to change the process of teaching basic reading skills in secondary schools. Final Report to the National Institute of Education. Menlo Park, CA: SRI International.

Stallings, J. A., & Mohlman, G. (1982, April). Effective use of time in secondary reading classes. Paper presented at the meeting of the International Reading Association, Chicago, IL. (ERIC Document Reproduction Service No. ED 216 343)

Veenman, S. (1984). Perceived problems of beginning teachers. Review of Educational Research, 54, 143-178.

Walberg, H. J. (1968). Personality-role conflict and self-conception in urban practice teachers. The School Review, 76, 41-48.

Wright, B., & Tusca, S. (1965). The effects of institution on changes in self conception during teacher training and experience. Proceedings of the 73rd Annual Convention of the American Psychological Association, 299-300.

Zeichner, K. M., & Tabachnick, B. R. (1981). Are the effects of university teacher education "washed out" by school experience? Journal of Teacher Education, 32, 7-11.

Table 1

2 X 2 ANOVA Table for Hypothesis One

	Variable	Criterion		Experimental		Control		Significance Levels		
				Pre	Post	Pre	Post	Trtmnt.	Pre-Post	Interact.
	Teacher	.35 or	$\bar{X}$	.04	.13	.10	.08			*
1	Monitoring	less	SEM	.02	.03	.02	.02	ns	ns	.02
	Teacher	.50 or	$\bar{X}$	.60	.61	.56	.58			
2	Instructing	more	SEM	.04	.04	.03	.04	ns	ns	ns
	Teacher	.12 or	$\bar{X}$	.30	.21	.23	.23		*	
3	Managing	less	SEM	.03	.03	.02	.03	ns	.05	(.07)
	Teacher	.03 or	$\bar{X}$	.06	.03	.09	.10	*		
4	Alone	less	SEM	.02	.02	.02	.02	.02	ns	ns
	Students in	.35 or	$\bar{X}$	.13	.16	.18	.22			
5	Seatwork	less	SEM	.03	.03	.03	.04	ns	ns	ns
	Students in	.50 or	$\bar{X}$	.44	.55	.38	.36	*		*
6	Instruction	more	SEM	.03	.04	.03	.03	.002	ns	.05
	Students in	.15 or	$\bar{X}$	.16	.13	.13	.16			
7	Management	less	SEM	.02	.02	.02	.02	ns	ns	ns
	Students	.06 or	$\bar{X}$	.24	.14	.26	.25	*	*	*
8	Off Task	less	SEM	.03	.02	.03	.03	.03	.005	.04
	All	.80 or	$\bar{X}$	.63	.69	.63	.61			
9	Academics	more	SEM	.03	.03	.02	.03	ns	ns	ns
	All	.15 or	$\bar{X}$	.29	.26	.31	.34			
10	Management	less	SEM	.03	.03	.02	.02	ns	ns	ns
	All	.03 or	$\bar{X}$	.04	.03	.04	.04			
11	Behavior	less	SEM	.01	.01	.01	.01	ns	ns	ns

Table 2

2 X 3 ANOVA Table for Hypothesis Two

	Variable	Criterion		Feedback Plus Workshop		Feedback Only		Control		Significance Levels		
				Pre	Post	Pre	Post	Pre	Post	Trmnt.	Pre-Post	Interact.
	Teacher	.35 or	$\bar{X}$	.04	.13	.16	.19	.10	.08	*		
1	Monitoring	less	SEM	.02	.03	.04	.06	.02	.02	.02	ns	ns
	Teacher	.50 or	$\bar{X}$	.60	.61	.38	.66	.56	.58			*
2	Instructing	more	SEM	.04	.04	.05	.08	.03	.04	ns	ns	.04
	Teacher	.12 or	$\bar{X}$	.30	.21	.34	.13	.23	.23		*	*
3	Managing	less	SEM	.03	.03	.07	.05	.02	.03	ns	.002	.008
	Teacher	.03 or	$\bar{X}$	.06	.03	.13	.02	.09	.10			
4	Alone	less	SEM	.02	.02	.07	.02	.02	.02	ns	ns	ns
	Students in	.35 or	$\bar{X}$	.13	.16	.38	.28	.18	.22	*		
5	Seatwork	less	SEM	.03	.03	.06	.07	.03	.04	.01	ns	ns
	Students in	.50 or	$\bar{X}$	.44	.55	.26	.49	.38	.36	*	*	*
6	Instruction	more	SEM	.03	.04	.04	.07	.03	.03	.005	.02	.01
	Students in	.15 or	$\bar{X}$	.16	.13	.16	.11	.13	.16			
7	Management	less	SEM	.02	.02	.05	.04	.02	.02	ns	ns	ns
	Students	.06 or	$\bar{X}$	.24	.14	.19	.12	.26	.25	*	*	
8	Off Task	less	SEM	.03	.02	.03	.03	.03	.03	.02	.002	ns
	All	.80 or	$\bar{X}$	.63	.69	.59	.69	.63	.61			
9	Academics	more	SEM	.03	.03	.03	.04	.02	.03	ns	ns	ns
	All	.15 or	$\bar{X}$	.29	.26	.35	.26	.31	.34			
10	Management	less	SEM	.03	.03	.03	.04	.02	.02	ns	ns	ns
	All	.03 or	$\bar{X}$	.04	.03	.03	.05	.04	.04			
11	Behavior	less	SEM	.01	.01	.01	.02	.01	.01	ns	ns	ns

Table 3

Within-Group t Test Table for Hypothesis Three

	Variable	Criterion	$\bar{X}$ with Trainer As Observer	$\bar{X}$ with Other As Observer	SED	Significance Level
1	Teacher Monitoring	.35 or less	.09	.06	.08	ns
2	Teacher Instructing	.50 or more	.68	.66	.13	ns
3	Teacher Managing	.12 or less	.23	.17	.10	ns
4	Teacher Alone	.03 or less	0.00	.03	.03	ns

9	All Academics	.80 or more	.63	.73	.04	(.06)
10	All Management	.15 or less	.32	.22	.02	.02*
11	All Behavior	.03 or less	.02	.04	.01	ns

Table 4

Between-Groups t Test Table for Hypothesis Three

	Variable	Criterion	$\bar{X}$ with Trainer As Observer	$\bar{X}$ with Other As Observer	SED	Significance Level
1	Teacher Monitoring	.35 or less	.10	.20	.07	ns
2	Teacher Instructing	.50 or more	.57	.59	.03	ns
3	Teacher Managing	.12 or less	.25	.19	.08	ns
4	Teacher Alone	.03 or less	.07	.02	.07	ns
5	Students in Seatwork	.35 or less	.25	.14	.08	ns
6	Students in Instruction	.50 or more	.44	.52	.11	ns
7	Students in Management	.15 or less	.18	.13	.06	ns
8	Students Off Task	.06 or less	.13	.19	.06	ns
9	All Academics	.80 or more	.68	.71	.09	ns
10	All Management	.15 or less	.27	.25	.09	ns
11	All Behavior	.03 or less	.04	.03	.02	ns

	Experimental Group			Control Group		
	Grades 1-4	Grades 5-8	Grades 9-12	Grades 1-4	Grades 5-8	Grades 9-12
Study A	2	1 1-Math	4 1-Busns. 1-Math 2-P.E..	2	2 1-Art 1-Sci.	4 1-Busns. 1-English 2-History
Study B	4	2 1-Science 1-Soc.St.	0	2	0	5 2-Busns. 2-English 1-History
Study C	0	0	7 1-English 3-History 2-Math 1-Science	0	5 1-Art 1-English 1-Math 1-Science 1-Soc.St	3 1-Busns. 1-French 1-Math
Combined A, B, C for ANOVA	6	3	11	4	7	12
Study D	4	0	3 1-Biology 1-English 1-History			

Figure 1. Student teacher subject area and/or grade level assignments by study and by group.

Mutually Exclusive Teacher Variables (from Classroom Snapshot)

Variable #	% Teacher Engagement	Activities Aggregated
1	Interactive Instruction	reading aloud, discussion/review, instruction/explanation, practice drill, non-math/reading instruction
2	Monitoring Seatwork	monitoring silent reading, written work, testing
3	Classroom Management with Students	classroom management, making assignments, providing discipline
4	Classroom Management Alone	(e.g. grading/filing papers)

Mutually Exclusive Student Variables (from Classroom Snapshot)

Variable #	% Student Engagement	Aggregated Activities
5	Interactive Instruction	reading aloud, discussion/review, instruction/explanation, practice drill, non-math/reading instruction
6	Seatwork Activities	reading silently, written assignments, testing
7	Classroom Management	classroom management, receiving assignments
8	Off-Task Behavior	social interaction, uninvolved, being disciplined

Mutually Exclusive Whole Classroom Variables (from Five-Minute Interaction)

Variable #	% Statements/Activities
9	All Academic
10	All Managerial
11	All Behavioral

Figure 2. Specific variables and their aggregate parts for teacher, student, and total class time use drawn from the Classroom Snapshot and Five-Minute Interaction data.

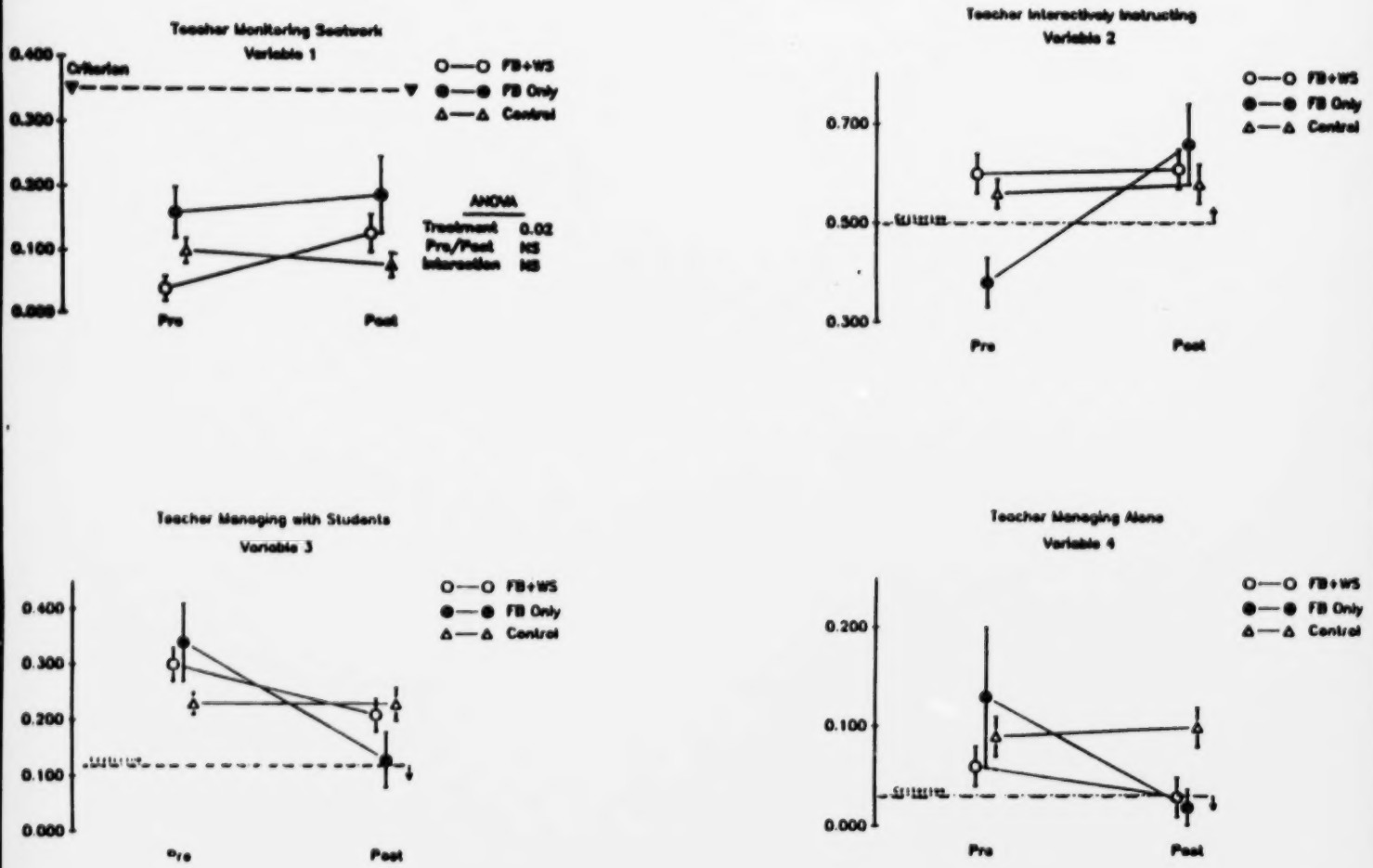

Figure 3. Change in time use for teacher-focused variables.

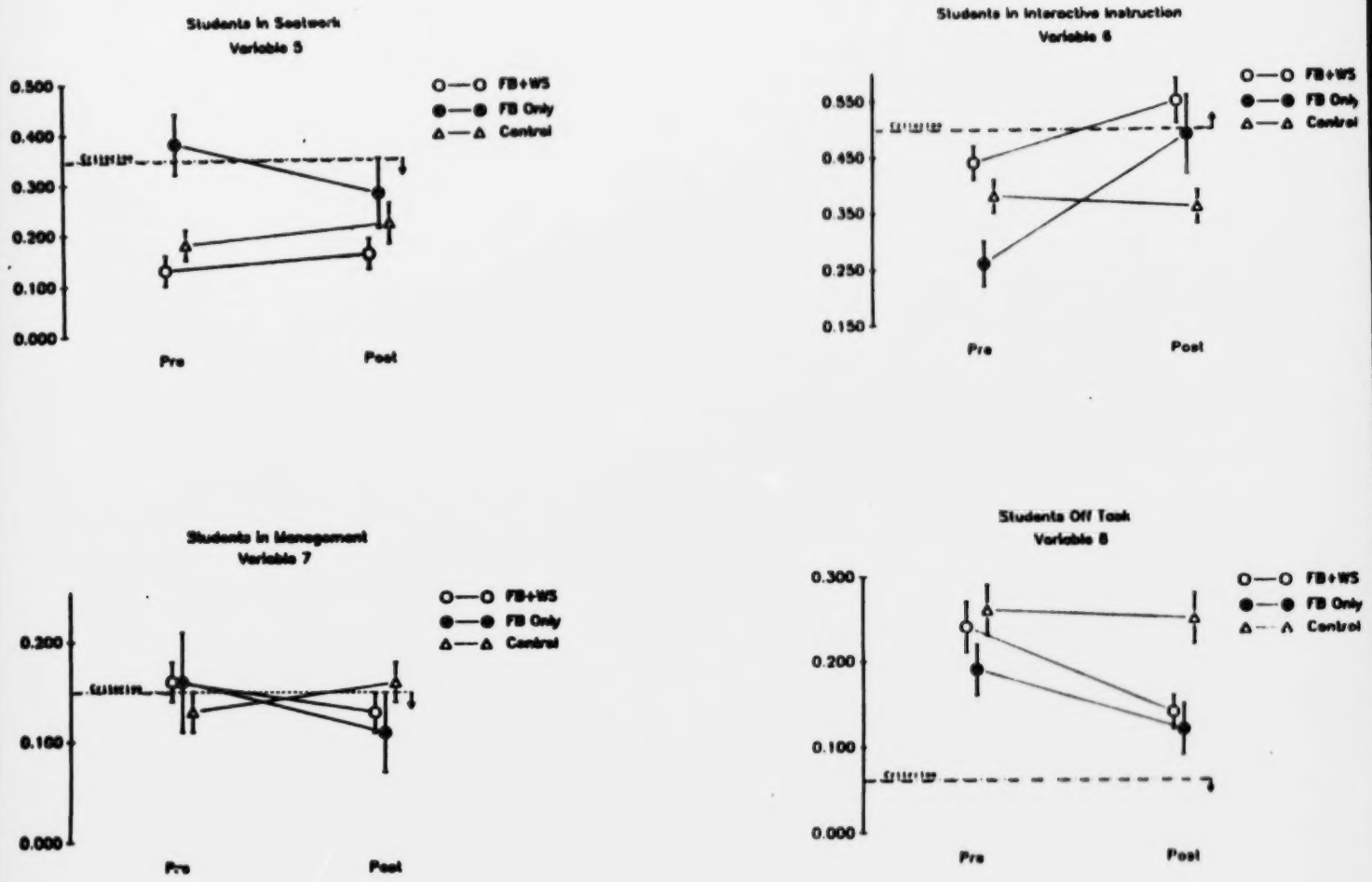

Figure 4. Change in time use for student-focused variables.

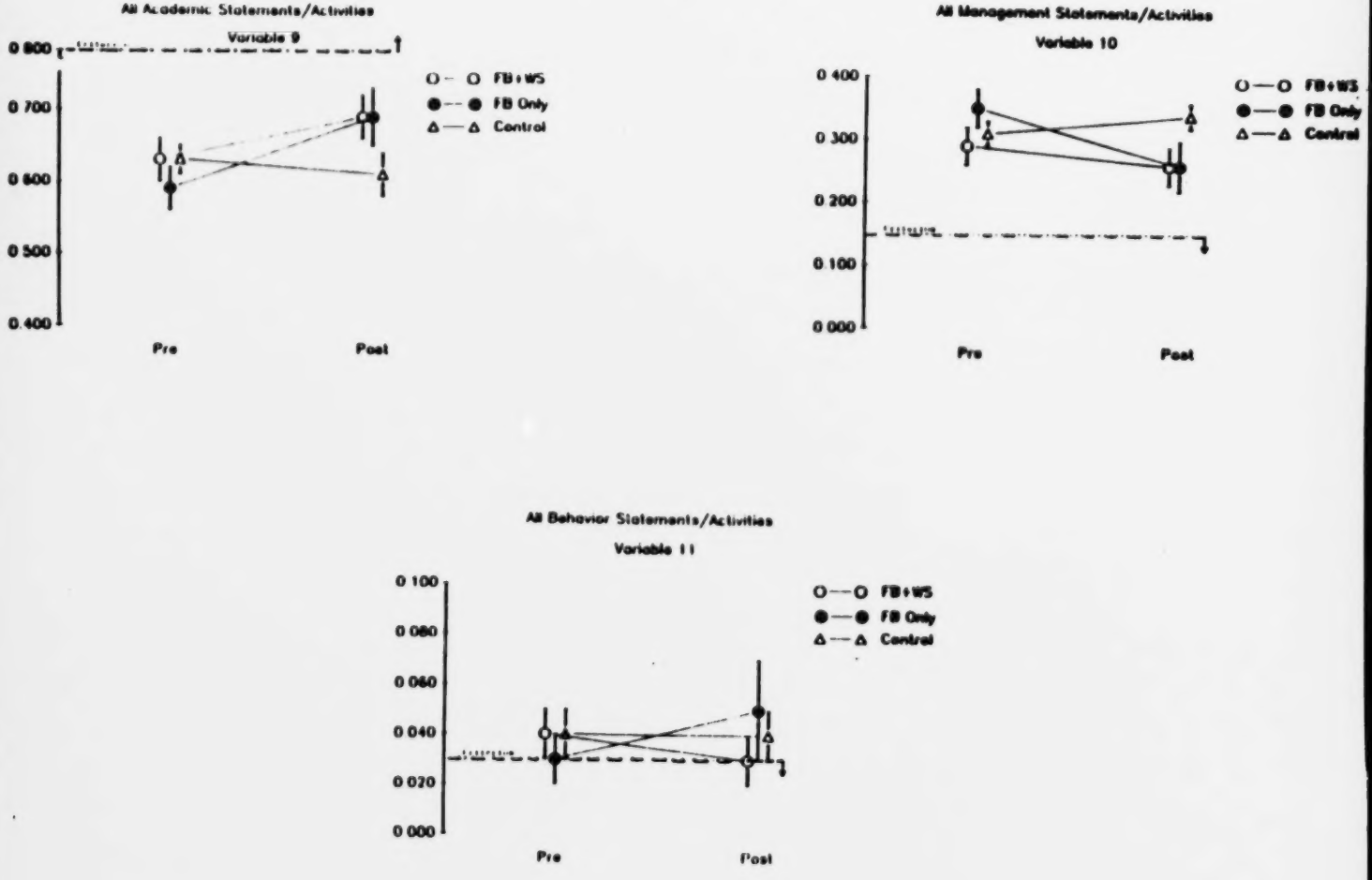

Figure 5. Change in time use for classroom-focused variables.

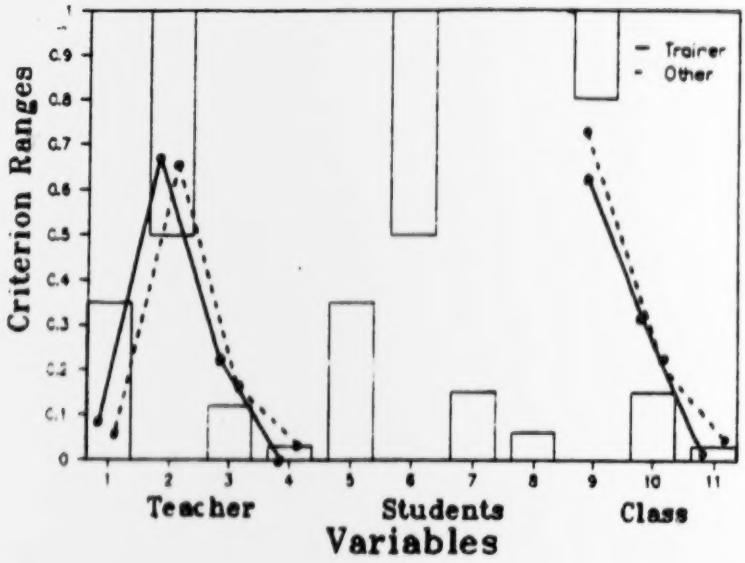

Figure 6. Differences in post-treatment scores when student teachers within a group were observed by the trainer and by another.

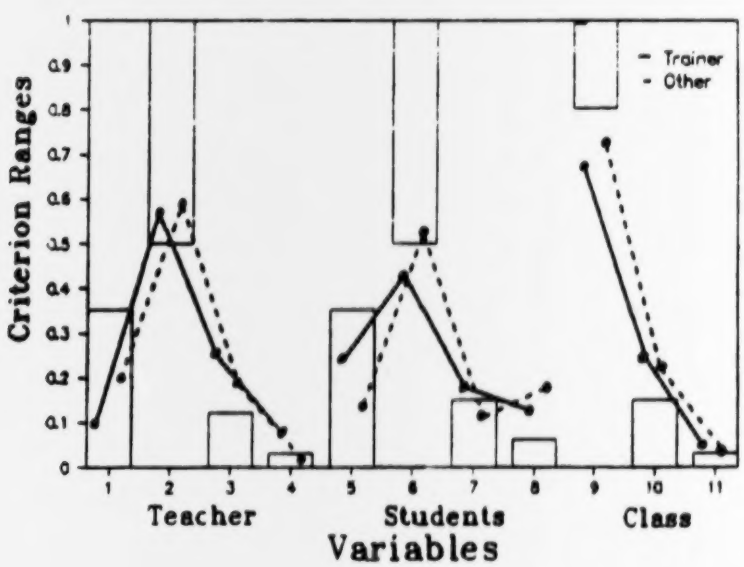

Figure 7. Differences in post-treatment scores between student teachers observed by the trainer and student teachers observed by another.